REMARKS

Claims 1, 3, 4, 9-14 and 20-28 are presently pending in the application. Claim 28 is an independent claim newly presented for examination. Claims 5-8 are presently withdrawn from consideration.

The disclosure was objected to because of an informality appearing on page 34, line 20, wherein reference numeral "11" should read "21". Such a correction is now being made so as to overcome the objection.

Claim 4 was objected to for the requirement of the correction of the phrase "on a upper surface" so as to read "on an upper surface". Such an amendment is now made so as to overcome the objection.

Claims 3, 9, 12, 19, 20 and 23 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. Suitable amendments are now being made so as to overcome the rejection and the Examiner is, therefore, requested to withdraw the rejection.

Claims 1-4, 9-12, 15-19, 21 and 23-26 stand rejected under 35 U.S.C. 102(e) as being anticipated by *Kudo*. Claims 13 and 22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Kudo* in view of *Towe et al.* Claim 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Kudo* in view of *McFarland et al.* Claims 14 and 27 stand rejected under 35 U.S.C. 103(a) as being unpatentable over *Kudo* in view of *Mazed*. It is respectfully submitted that these rejections are now overcome for the following reasons.

Applicant's invention as now claimed specifically sets forth the essential features of the present invention, namely; a semiconductor laser element including a plurality of identical laser emission portions wherein each of the laser emission portions are arranged side by side in a parallel array and wherein each of the laser emission portions include an active layer for emitting light. Also, each of the laser emission portions is connected to a multi-mode interference region by equal length waveguides. Since all of the laser emission portions are substantially alike and equal length waveguides couple the active layers to the multi mode interference region, jitter is substantially reduced or eliminated which would otherwise be caused by irregularity of active layers having different dimensions when high speed modulation signals are applied.

In the claimed invention, each of the laser emission portions is electrically the same as all the others. With respect to the *Kudo* reference, it fails to disclose or suggest the essential features of the present invention and moreover it discloses an arrangement where all of the laser portions are provided with individual electrodes so as to oscillate independently of one another. Accordingly, the wavelength of each laser portion of *Kudo* can be or is varied slightly with each other and thus it is virtually impossible to generate the same wavelength for all of the laser portions and in the case of high speed modulation. As a result, jitter is generated due to phase difference of the signals based on the difference of wiring length of the driving circuit to the respective laser portion.

Additionally, in the present invention as now claimed, each of the laser emission portions is optically connected to the multi-mode interference region by equal length waveguides, thereby eliminating any time difference in the travel of the respective laser emissions so as to reduce or eliminate any jitter when a high speed modulation voltage is applied because all of the laser emission portions are equal to one another. On the contrary, the *Kudo* reference includes an optical multiplexer region so that light irradiated from each of the laser portions is entered into an MMI region with mutually different time differences.

Accordingly, applicant's claimed invention is totally different from the structure of *Kudo* which has an object of providing a multiple wavelength communication system and fails to disclose or suggest the features of the present invention which can overcome problems of high speed modulation, high power output, and time delay of laser emission which results in jitter, among other things.

With respect to the secondary references, *Towe et al.* merely discloses the concept of wave guiding layers being formed of AlGaAs. *McFarlane et al* merely discloses the concept of a fully reflective dielectric mirror layer located between a laser active region and a waveguide region. *Mazed* discloses the concept of applying a modulation signal to a laser chip via a plurality of discrete RF/OC transmission lines but not a single common transmission line or electrode as now claimed by applicant.

In view of the foregoing amendments and remarks, all of the claims now remaining in the application are deemed to be in condition for allowance and therefore further and favorable action is requested.

CONCLUSION

If the Examiner has any questions concerning this application, the Examiner is requested to contact William L. Gates, Reg. No. 20,848 at the telephone number of (703) 205-8000. Facsimile communications may be sent to William L. Gates at the facsimile number of (703) 205-8050.

Pursuant to 37 C.F.R. §§ 1.17 and 1.136(a), Applicant(s) respectfully petition(s) for a two month extension of time for filing a reply in connection with the present application, and the required fee of $410.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION

The paragraph beginning on page 34, line 16 and ending on page 35, line 7, has been amended as follows:

Figure **6** is a perspective view showing a semiconductor laser device **20** according to embodiment 3 of the present invention. The semiconductor laser device **20** includes a semiconductor substrate **21** made of n-type GaAs. The semiconductor substrate [**11**] **21** has a rectangular surface in which the longitudinal length is 1096 μm, and the width is 30μm. (Hereinafter, the longitudinal direction of the semiconductor substrate **21** and the direction of the width of the semiconductor substrate **21** are simply referred to as "longitudinal direction" and "width direction", respectively.) A negative electrode **26** is provided on the entire lower surface of the semiconductor substrate **21**. Figure **6** is exaggerated so that the longitudinal length of the semiconductor substrate **21** is schematically shorter than the width thereof.

IN THE CLAIMS

Claims 2 and 15-19 have been canceled.

The claims have been amended as follows:

1. (Amended) A semiconductor laser element, comprising:

a semiconductor laser region including a plurality of identical laser emission portions arranged side by side in a parallel array, each of said laser

emission portions [in which at least one laser emission portion] including an active layer for emitting light [is provided];

a multimode interference region including a first wave-guiding layer, wherein one end of the first wave-guiding layer [being] is equidistantly optically coupled to the active [layer] layers of the [at least one] plurality of laser emission [portion] portions; and

an output waveguide region including a second wave-guiding layer, the second wave-guiding layer being optically coupled to [another] an opposite end of the first wave-guiding layer of the interference region.

3. (Amended) A semiconductor laser element according to claim 1, wherein the semiconductor laser region, the multimode interference region, and the output waveguide region are provided on a [the] same semiconductor substrate.

9. (Amended) A semiconductor laser element according to claim 1, wherein the active layer of the [at least one] plurality of laser emission [portion] portions, the first wave-guiding layer of the multimode interference region, and the second wave-guiding layer of the output waveguide region are integrally formed of [the] a same type of semiconductor material.

10. (Amended) A semiconductor laser element according to claim 1 [wherein:

the semiconductor laser region includes a plurality of laser emission portions;] and additionally comprising,

an input waveguide region located between the semiconductor laser region and the interference region, and including a plurality of mutually spaced apart substantially equal length third wave-guiding layers for optically coupling [a plurality of] the active layers of the plurality of laser emission portions and the first wave-guiding layer of the multimode interference region [are provided between the plurality of active layers and the first wave-guiding layer].

12. (Amended) A semiconductor laser element according to claim 10, wherein the first wave-guiding layer and the plurality of third wave-guiding layers are comprised of substantially non-optically absorptive [formed of a low absorption] material.

20. (Amended) A semiconductor laser element according to claim [19] 28, wherein:

a dielectric film is provided between the plurality of active layers of the laser region and the plurality of second wave-guiding layers of the input waveguide region; and

wherein the plurality of active layers of the laser region and the plurality of second wave-guiding layers of input waveguide regions are optically coupled to each other through the dielectric film.

21. (Amended) A semiconductor laser element according to claim [19] 28, wherein the first wave-guiding layer and the plurality of second wave-guiding layers are [made] comprised of the same material having a low light absorption.

22. (Amended) A semiconductor laser element according to claim 21, wherein the first wave-guiding layer and the plurality of second wave-guiding layers are [made] comprised of AlGaAs.

23. (Amended) A semiconductor laser element according to claim [19] 28, wherein each of the plurality of second wave-guiding layers of the input waveguide region has a predetermined equivalent refractive index.

24. (Amended) A semiconductor laser element according to claim [19] 28, wherein each of the plurality of second wave-guiding layers has a predetermined width.

25. (Amended) A semiconductor laser element according to claim 24, wherein a manufacturing accuracy [error] in the width of each of the plurality of second wave-guiding layers with respect to the predetermined width is 0.05 μm or smaller.

26. (Amended) A semiconductor laser element according to claim [19] 28, wherein the geometric pattern of the plurality of second wave-guiding layers is made by a reduction exposure method.

27. (Amended) An electronic device including the semiconductor laser element of claim [15] 28, which outputs a modulated signal to the semiconductor laser element.

New claim 28 has been added.